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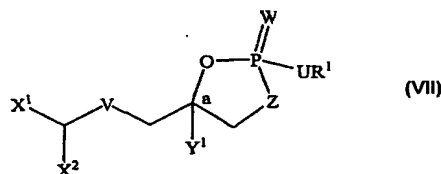
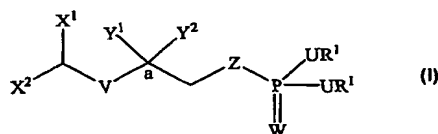
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(88) Date of publication of the international search report:
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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: ANALOGS OF LYSOPHOSPHATIDIC ACID AND METHODS OF MAKING AND USING THEREOF



(57) Abstract: Described herein are analogs of lysophosphatidic acid having the formula (I). Also described herein are methods of making and using analogs of lysophosphatidic acid for improving wound healing, reducing inflammation or allergic response increasing or altering cardiovascular function, eliciting or inhibiting platelet aggregation, maintaining or terminating embryonic development.

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INTERNATIONAL SEARCH REPORT

International Application No

PCT/US2004/011060

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 C07F9/6578

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 C07F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ, BEILSTEIN Data, CHEM ABS Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	XU, YONG AND PRESTWICH G D: "Synthesis of chiral (alpha,alpha-difluoroalkyl) phosphonate analogues of (lyso)phosphatidic acid via hydrolytic kinetic resolution" ORGANIC LETTERS., vol. 4, no. 23, 25 October 2002 (2002-10-25), pages 4021-4024, XP002311035 USACS, WASHINGTON, DC. scheme 1 and scheme 2 page SCHEME ----- -/--	1-7, 26-32, 65-67, 71-88

☒ Further documents are listed in the continuation of box C.

☐ Patent family members are listed in annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

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"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

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Date of the actual completion of the international search

21 December 2004

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	XU, YONG AND PRESTWICH, G D: "Concise synthesis of acyl migration-blocked 1,1-difluorinated analogues of lysophosphatidic acid" JOURNAL OF ORGANIC CHEMISTRY., vol. 67, no. 20, 12 September 2002 (2002-09-12), pages 7158-7161, XP002311036 USAMERICAN CHEMICAL SOCIETY. EASTON. scheme 2, compounds 7,8,9a,9b,10a,10b page 7158 -----	1-7, 26-32, 65-67, 71-88
X	GHANGAS ET AL: "stereospecific synthesis of D-1-fluorodeoxyglycerol 3-phosphate and its effects on glycerol 3-phosphate dehydrogenase" BIOCHEMISTRY., vol. 10, no. 17, 1971, pages 3204-3210, XP002311037 USAMERICAN CHEMICAL SOCIETY. EASTON, PA. page 3204 Figure 1, product -----	1-7, 26-32, 65-67, 71-88
X	LLOYD ET AL: "synthesis of 1-deoxy-1-fluoro-L-glycerol and its 3-phosphate" CARBOHYDRATE RESEARCH., vol. 26, 1973, pages 91-98, XP002311038 NLELSEVIER SCIENTIFIC PUBLISHING COMPANY. AMSTERDAM. page 92, compounds 3-5 page 96, synthesis of 5 page 97, synthesis of 4 and 5 -----	1-7, 26-32, 65-67
P,X	QIAN, L ET AL: "Synthesis of migration-resistant hydroxyethoxy analogues of lysophosphatidic acid" ORGANIC LETTERS., vol. 5, no. 24, 30 October 2003 (2003-10-30), pages 4685-4688, XP002311039 USACS, WASHINGTON, DC. schemes 1, 2, 3 -----	1-7, 26-32, 65-67, 71-88
P,X	XU Y ET AL: "Synthesis of difluoromethyl substituted lysophosphatidic acid analogues" TETRAHEDRON, ELSEVIER SCIENCE PUBLISHERS, AMSTERDAM, NL, vol. 60, no. 1, 1 January 2004 (2004-01-01), pages 43-49, XP004480007 ISSN: 0040-4020 scheme 1 -----	1-7, 26-32, 65-67, 71-88
	-/--	

International Application No

PCT/US2004/011060

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P,X	<p>XU, Y ET AL: "synthesis of monofluorinated analogues of lysophosphatidic acid" JOURNAL OF ORGANIC CHEMISTRY., vol. 68, no. 13, 31 May 2003 (2003-05-31), pages 5320-5330, XP002311040 USAMERICAN CHEMICAL SOCIETY. EASTON. schemes 1 and 2 -----</p>	<p>1-7, 26-32, 65-67, 71-88</p>

International application No.
PCT/US2004/011060

Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☒ Claims Nos.: **73-80,82,83 with respect to industrial applicability**
because they relate to subject matter not required to be searched by this Authority, namely:
Although claims 73-80,82,83 are directed to a method of treatment of the human/animal body, the search has been carried out and based on the alleged effects of the compound/composition.
2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this International application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:
1,2,32,65-67,71-88part and 3-5,6-7,26-31fully

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1,2,32,65-67,71-88 partially and 3-5,6-7,26-31 fully

Compounds of claims 1,32,64, methods for their production and their use according to claims 73-88 where the variable Z is oxygen

2. claims: 1,2,32,64-67,71-88 partially and 57-63 fully

Compounds of claims 1,32,64, methods for their production and their use according to claims 73-88 where the variable Z is sulfur

3. claims: 1,2,32,64-67,71-88 partially

Compounds of claims 1,32,64, methods for their production and their use according to claims 73-88 where the variable Z is NR1

4. claims: 1,2,32,65-67,71-88 partially and 22-25, 46-56 fully

Compounds of claims 1,32,64, methods for their production and their use according to claims 73-88 where the variable Z is CH2

5. claims: 1,2,32,33,42-45,64-67,71-88 partially and 8-16,34-37,68-70 fully

Compounds of claims 1,32,64, methods for their production and their use according to claims 73-88 where the variable Z is CHF

6. claims: 1,2,32,33,42-45,64-67,71-88 partially and 17-21,38-41 fully

Compounds of claims 1,32,64, methods for their production and their use according to claims 73-88 where the variable Z is CF2

7. claims: 1,2,32,64-67,71-88 partially

Compounds of claims 1,32,64, methods for their production and their use according to claims 73-88 where the variable Z is CHOR2
